

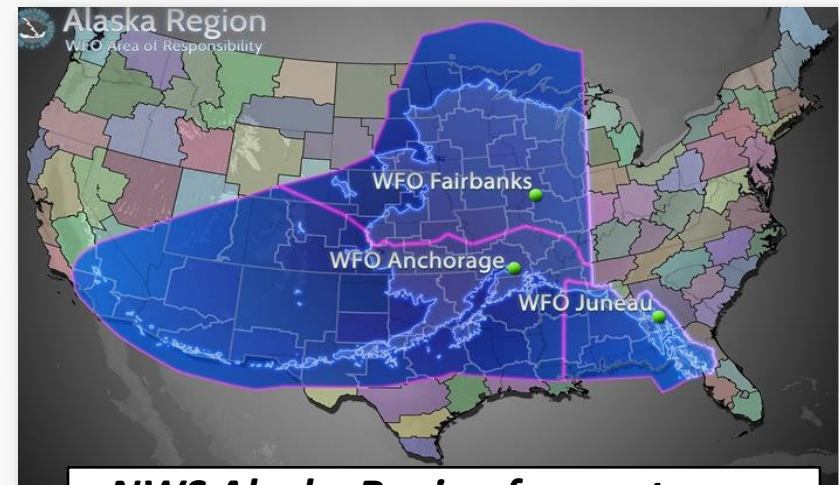
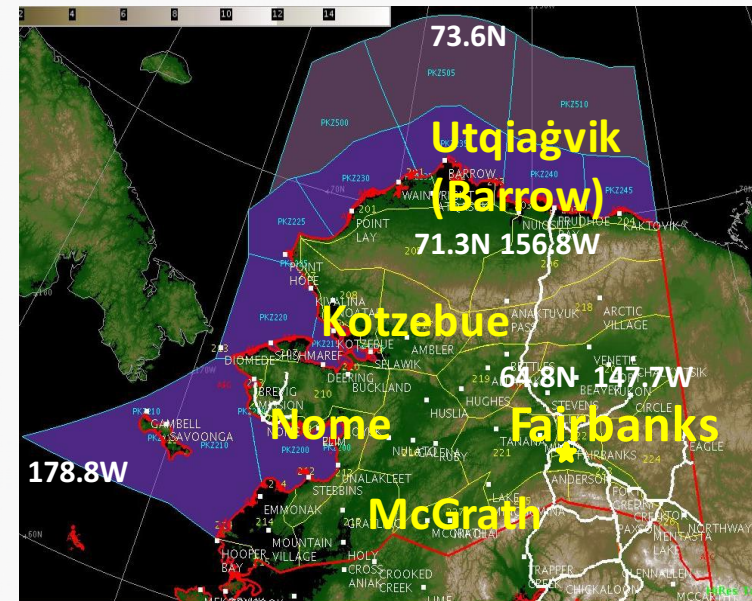


NWS SATELLITE OPERATIONS IN ALASKA

**NOAA Satellite Conference
Session 18: JPSS User Testimonials
July 19, 2017**

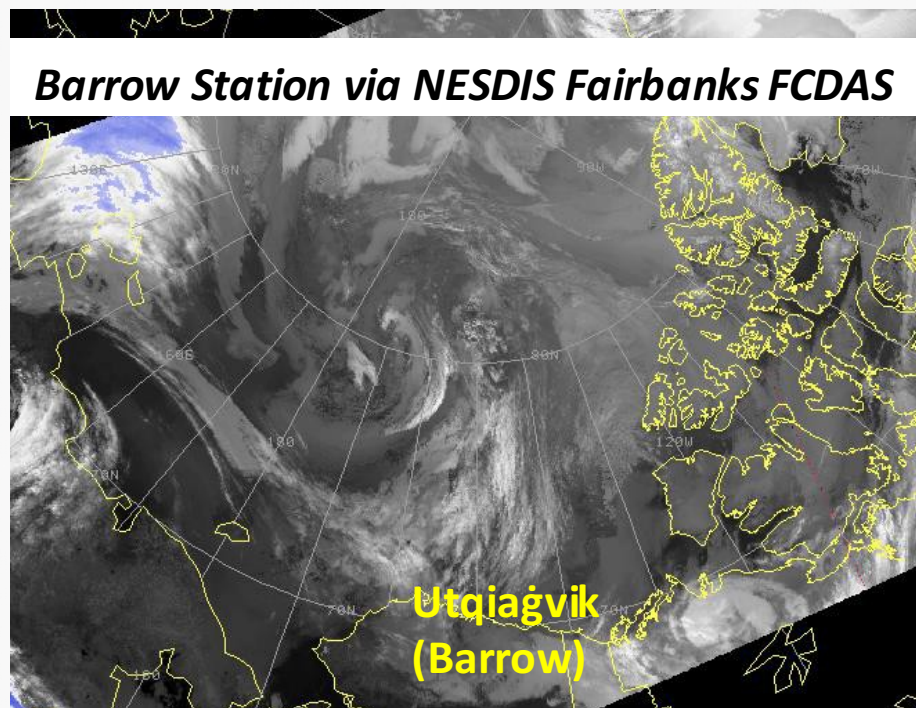
**Melissa Kreller
Science Operations Officer and Acting Meteorologist In Charge
National Weather Service
Fairbanks Weather Forecast Office**

- Collaborative Partners
- LEO Satellite Operations in NWS Alaska Region
 - River Flooding
 - Fire Weather
 - Sea Ice
- Future Collaborations
 - JPSS Arctic Initiative

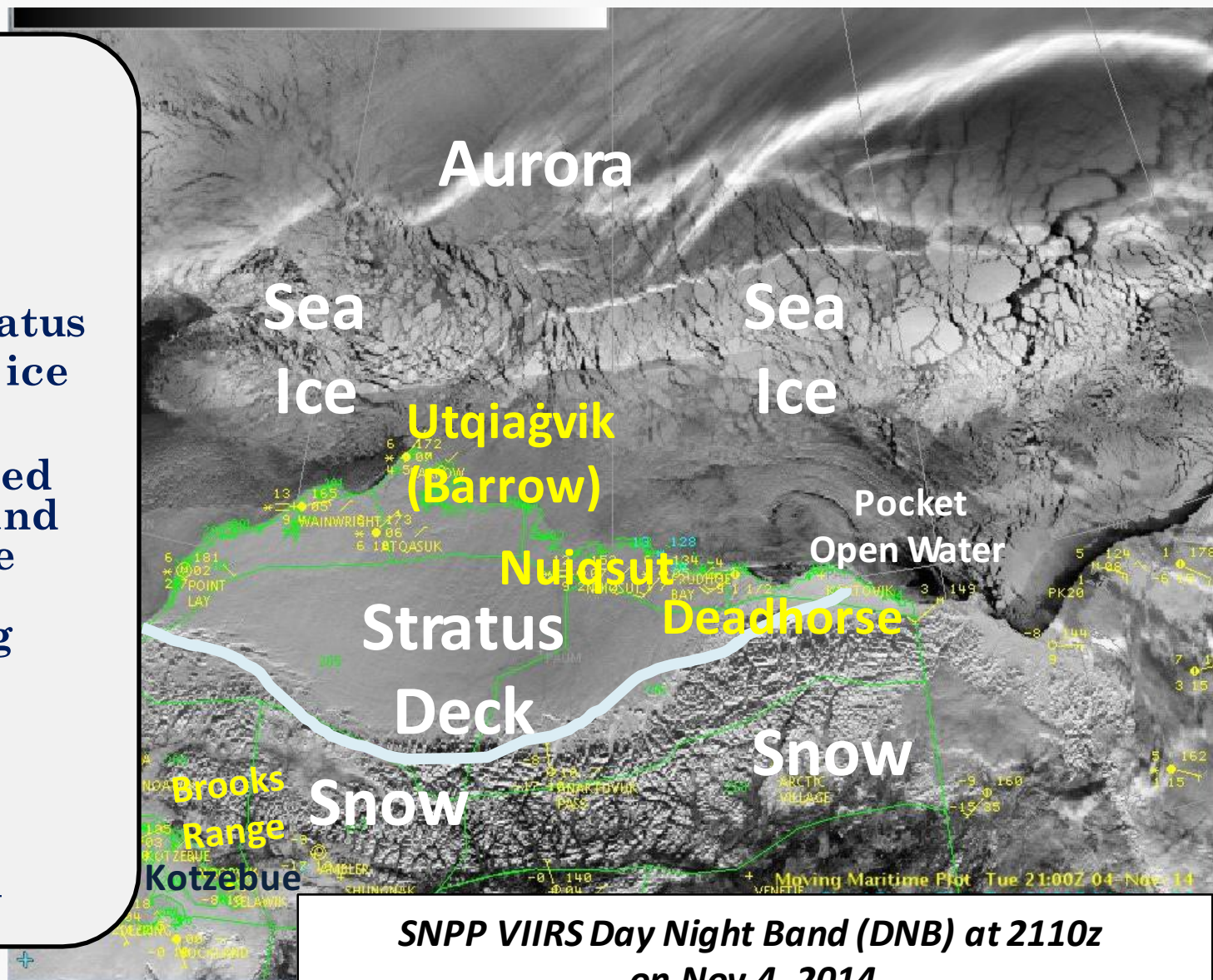


NWS Alaska Region forecast area of responsibility (AOR)

- **OCONUS Proving Ground Partners**
 - JPSS
 - GOES-R
 - NASA SPoRT
 - Cooperative Institutes: CIRA, CIMSS, CIRES, CIMMS
- NESDIS Fairbanks Command Data Acquisition Center (FCDAS) at Gilmore Creek
- Geographic Information Network of Alaska (GINA) University of Alaska Fairbanks (UAF)

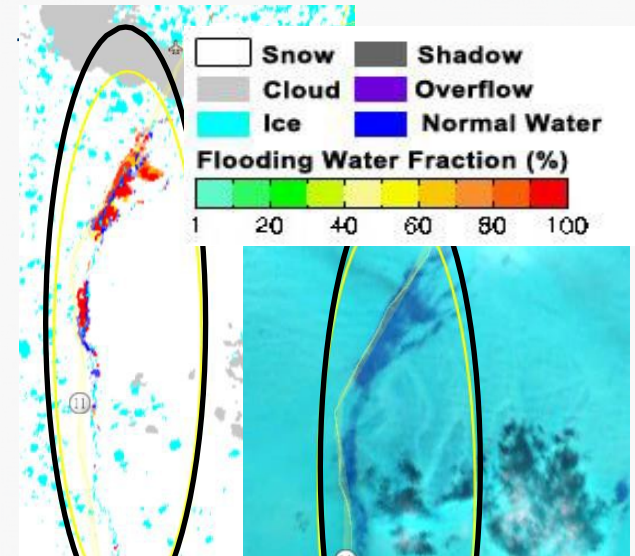


- Sea Ice Analysis
- Land Impacts
 - Fog/Stratus
 - Coastal ice
 - Snow
 - Combined Winds and Satellite data: Blowing Snow
- Marine Impacts
 - Coastal Erosion

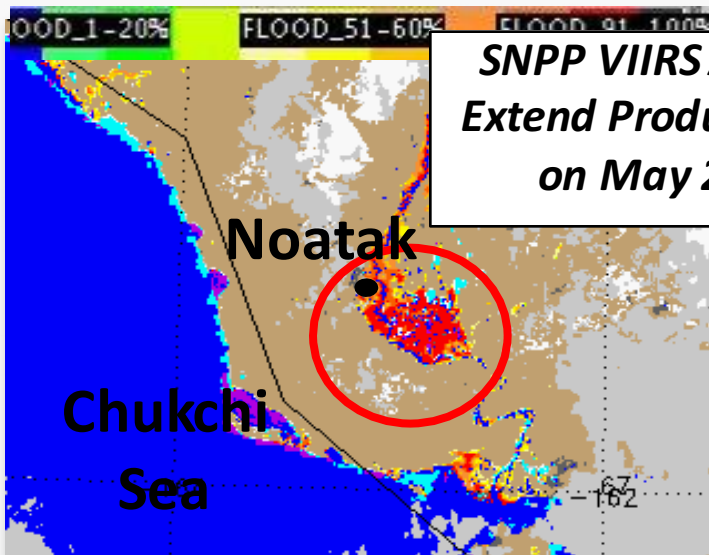


RIVER FLOODING

- JPSS Risk Reduction Project: River Ice and Areal Flooding Product
 - Collaboration 2014-2017
 - 2016 Sanmei Li (GMU) visited Alaska Region during ice break up
 - COMET Training: *JPSS River Ice and Flood Products*



Sagavanirktok (Sag) River on the Dalton Highway



SNPP VIIRS Areal Flood Extend Product at 0057Z on May 20, 2015

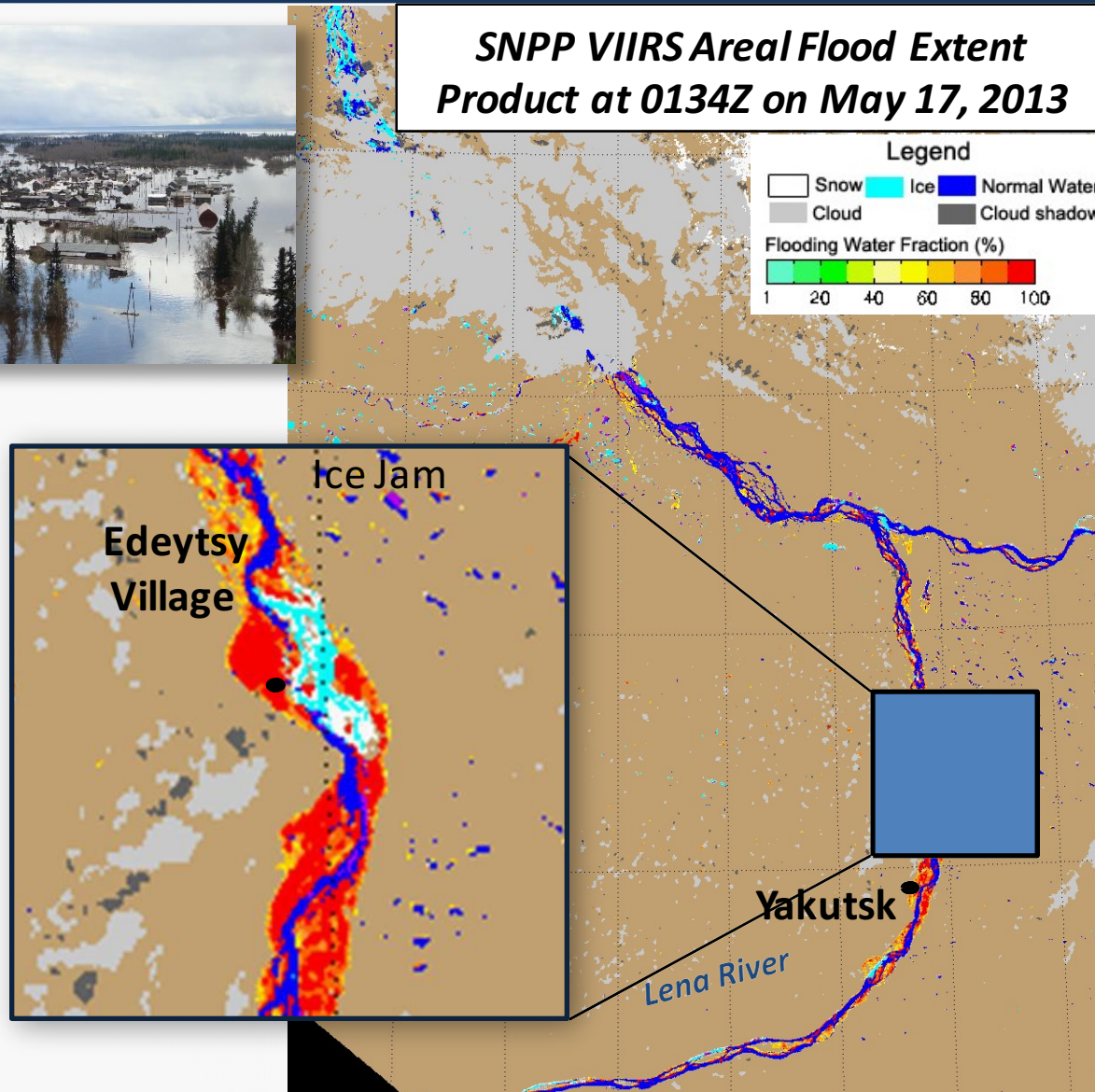


SNPP VIIRS River Ice and Areal Flood Extent Products on April 8, 2015 at 12:15 ADT

RIVER FLOODING



***SNPP VIIRS Areal Flood Extent
Product at 0134Z on May 17, 2013***



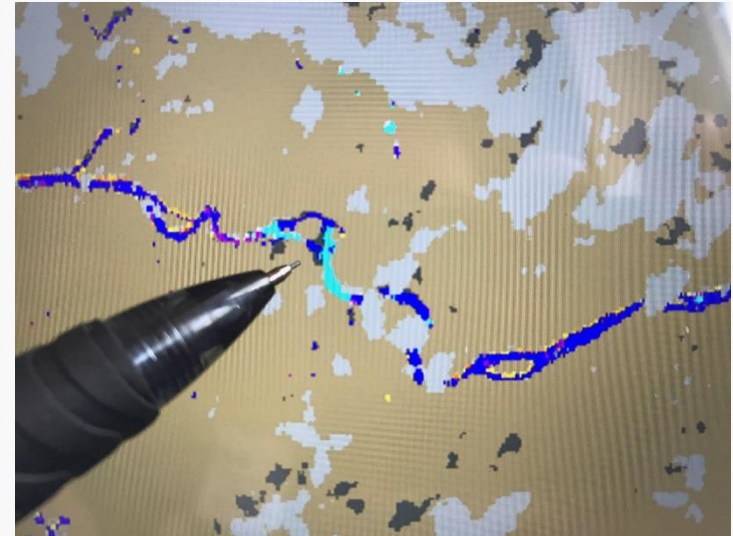
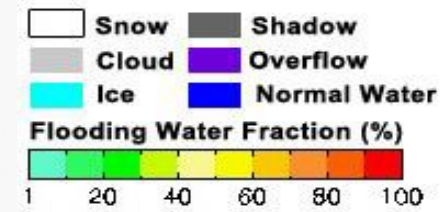
Yakutia,
Russia
May 2013

**US Department
funded Peer to
Peer Program –
Sharing Best
Practices**



RIVER FLOODING

- 2017 River and Ice Break-up Season on Yukon River
 - No flooding issues with relatively quiet with the gradual ice break-up
 - Warning Coordination Meteorologist (WCM) provided DSS to Mayor of Galena.
 - Provided text message with image:

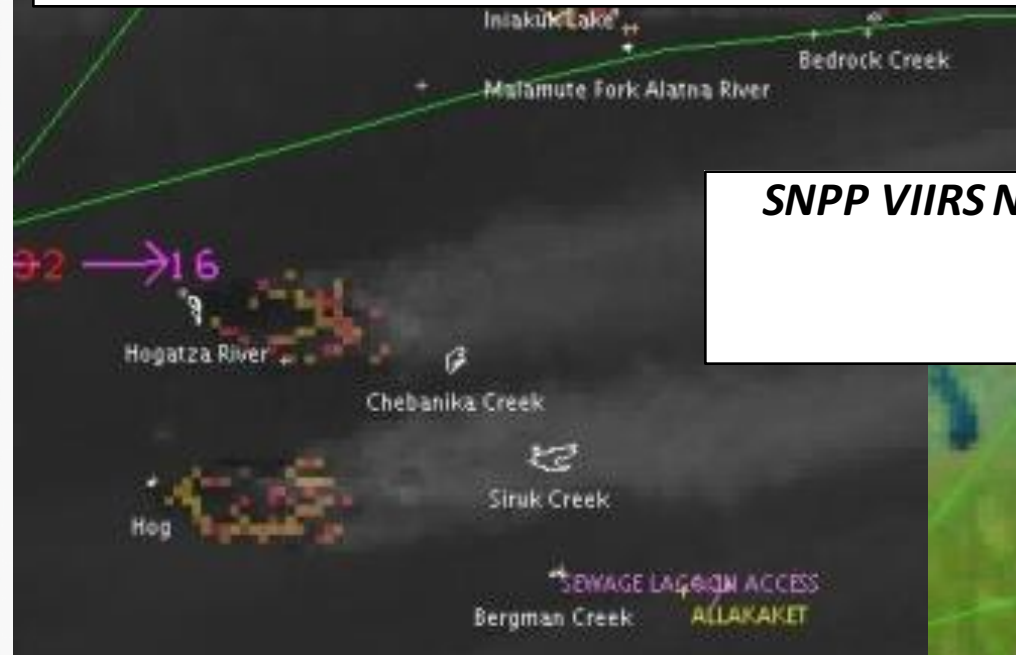


“Here is latest satellite image. Light blue is ice. Only ice left is from Upper end of Jimmy slough to Galena. Looks like ice is totally deteriorated at Bishop Rock. Light blue is water.”

**SNPP VIIRS Areal Flood
Extend Product at 2139z
on May 13, 2017**

FIRE WEATHER

***SNPP VIIRS 3.7um BT and 0.64 um refl on
July 15, 2016 at 2055z***

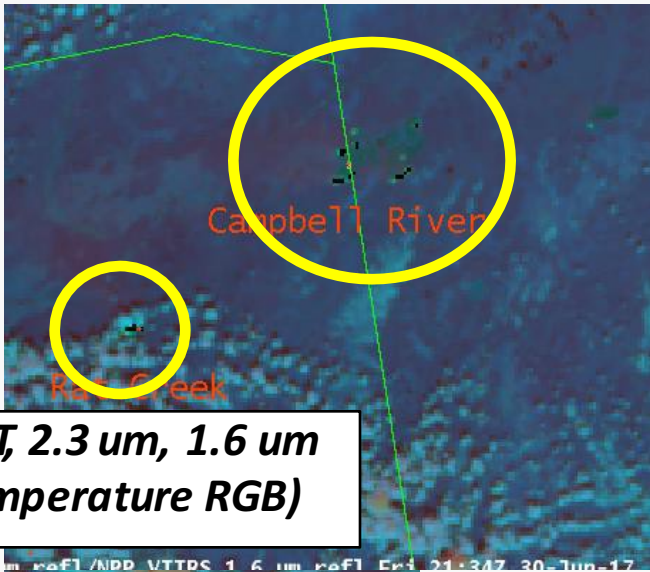


***SNPP VIIRS Natural Color RGB: 1.61um , 0.86um, 0.64
um refl on
July 15, 2016 at 2055z***

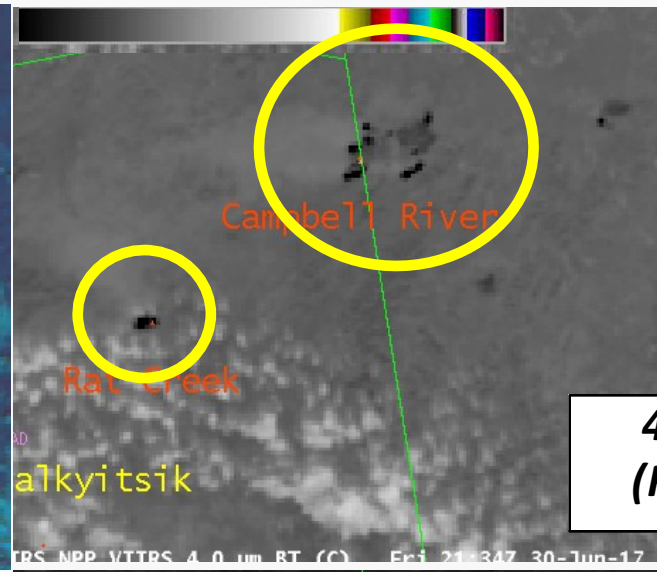


- “Hot Spots” Fire weather monitoring
 - Provide DSS for Alaska Fire Service

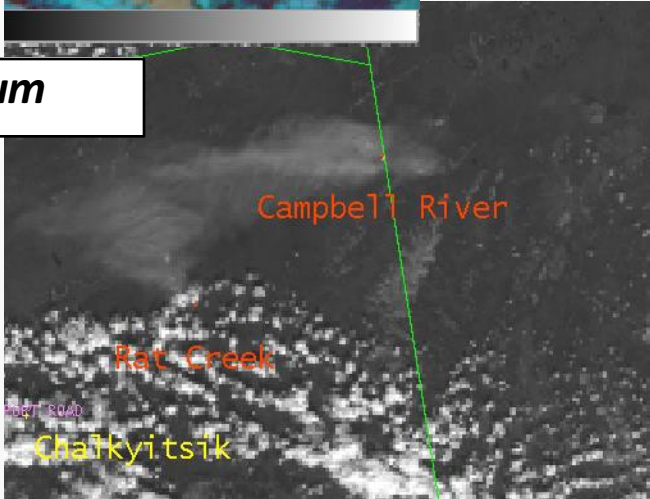
FIRE WEATHER



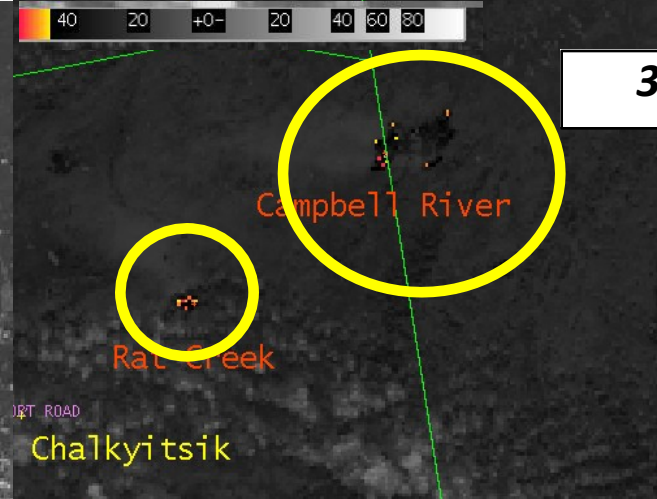
**3.7 um BT, 2.3 um, 1.6 um
(Fire Temperature RGB)**



**4.0 um BT
(Fire Band)**



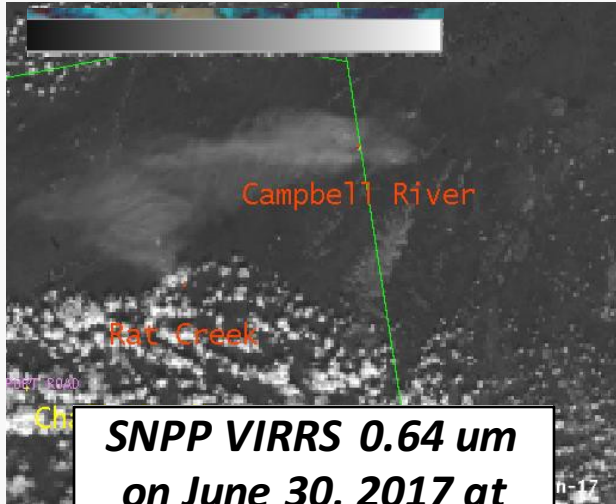
0.64 um



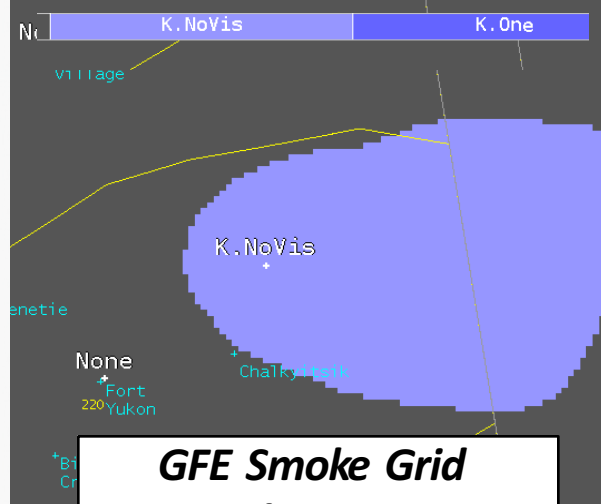
3.7 um BT

**SNPP VIRRS 4 panel imagery on June 30, 2017 at 2134z. Campbell River
Wildfire next to Yukon, Canada.**

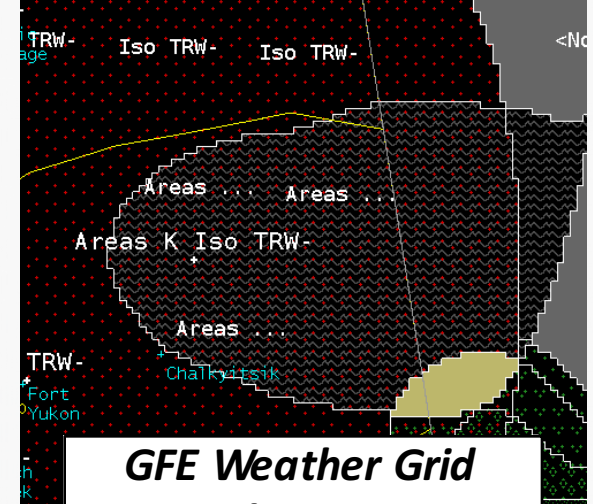
FIRE WEATHER



SNPP VIRRS 0.64 um
on June 30, 2017 at
2134z

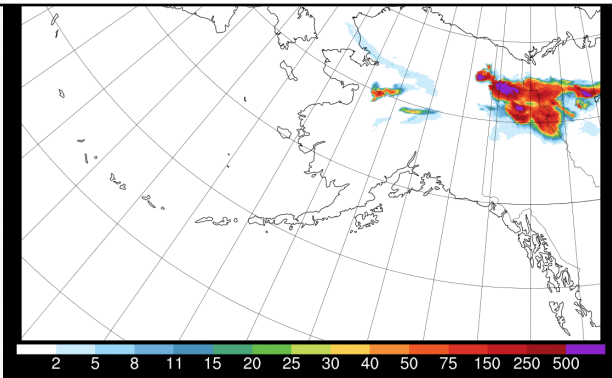


GFE Smoke Grid
Element

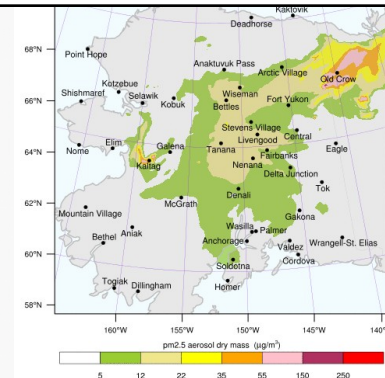


GFE Weather Grid
Element

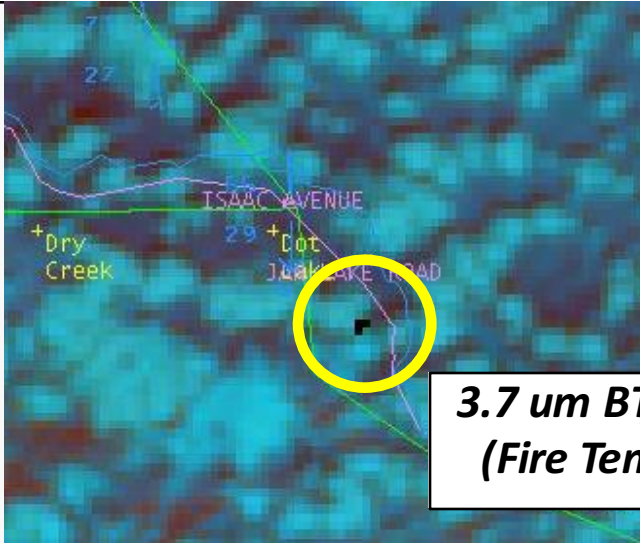
HRRR AK Smoke Vertical Integration
June 30, 2017 F24hr



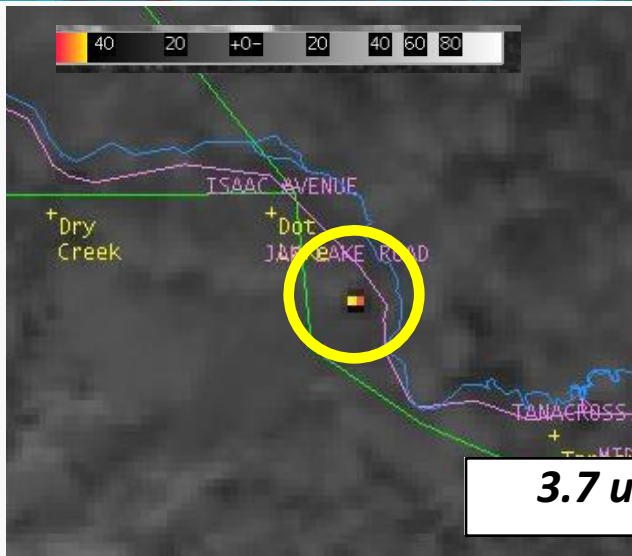
UAF AK Smoke Vertical Integration
June 30, 2017 F24hr



SNPP VIIRS on June 1, 2017 at 2200z



**3.7 um BT, 2.3 um, 1.6 um
(Fire Temperature RGB)**

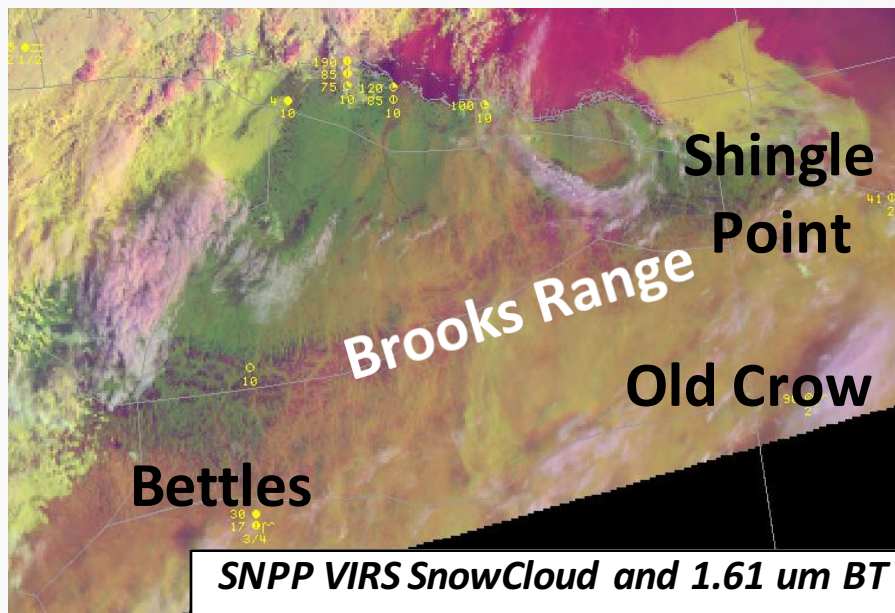
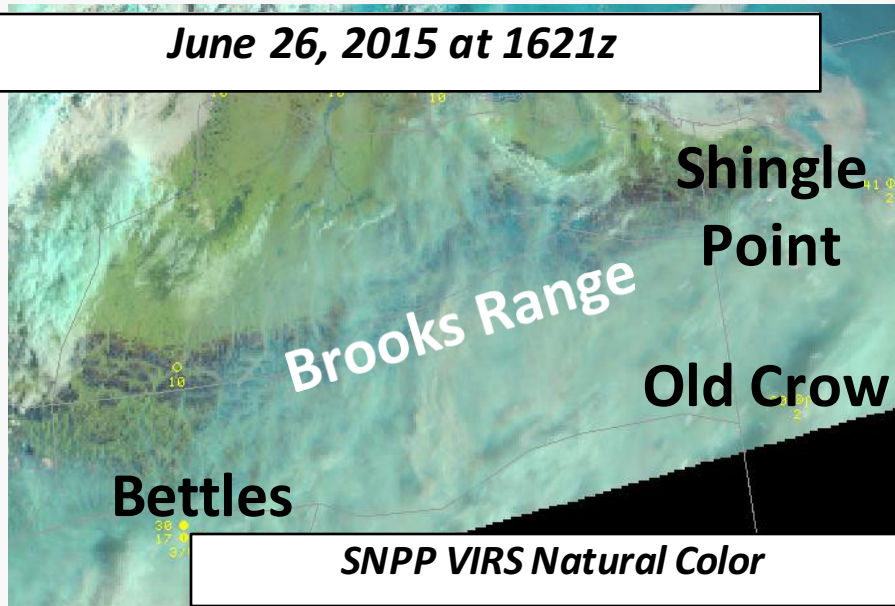


3.7 um BT



**North Robertson Wildfire on June 1, 2017
(images courtesy of Katy Turk near Tok)**

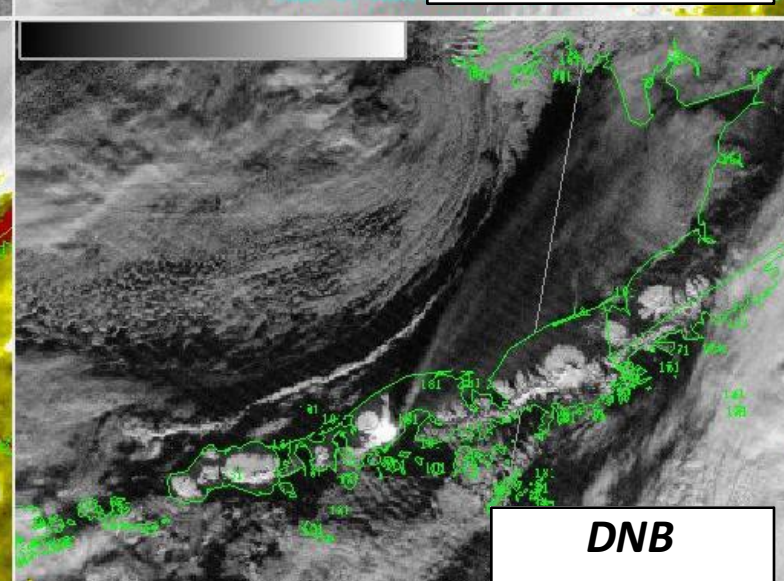
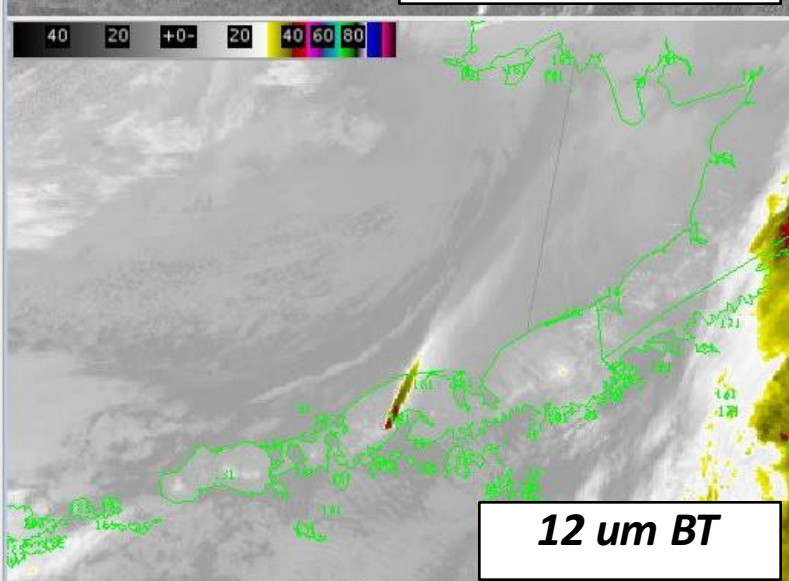
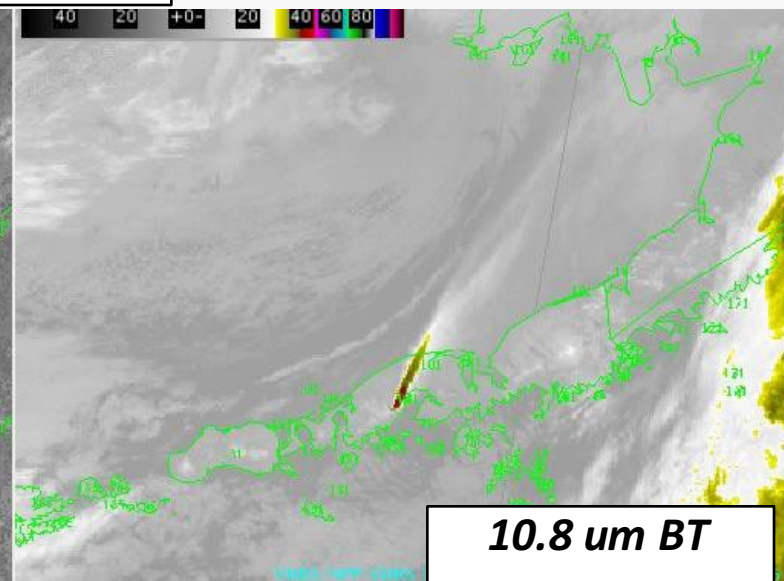
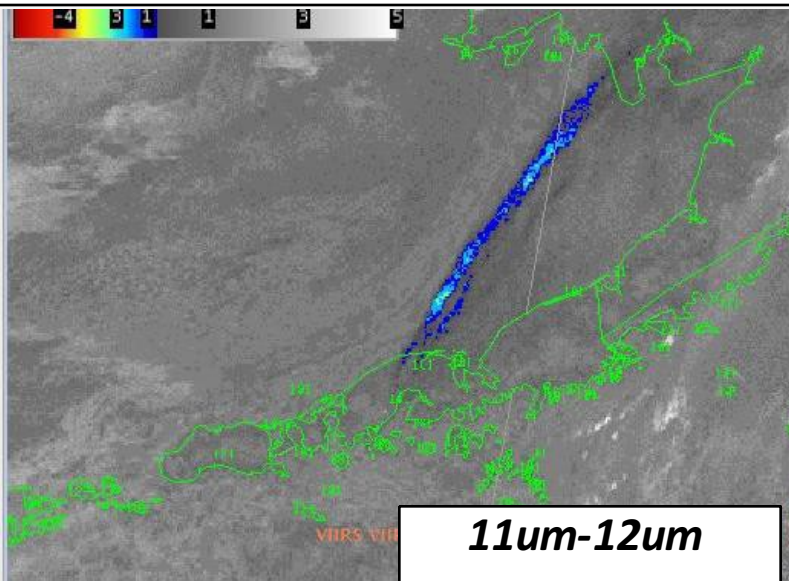
June 26, 2015 at 1621z



- 2015 Alaska near record fire season
 - 5.08 million acres burned
- Smoke Forecast
 - Identification areal extent of smoke
 - ✓ 2SM VIS reported at Shingle Point and Old Crow
 - ✓ 3/4SM VIS Bettles
 - ✓ 0SM VIS Tanana off map

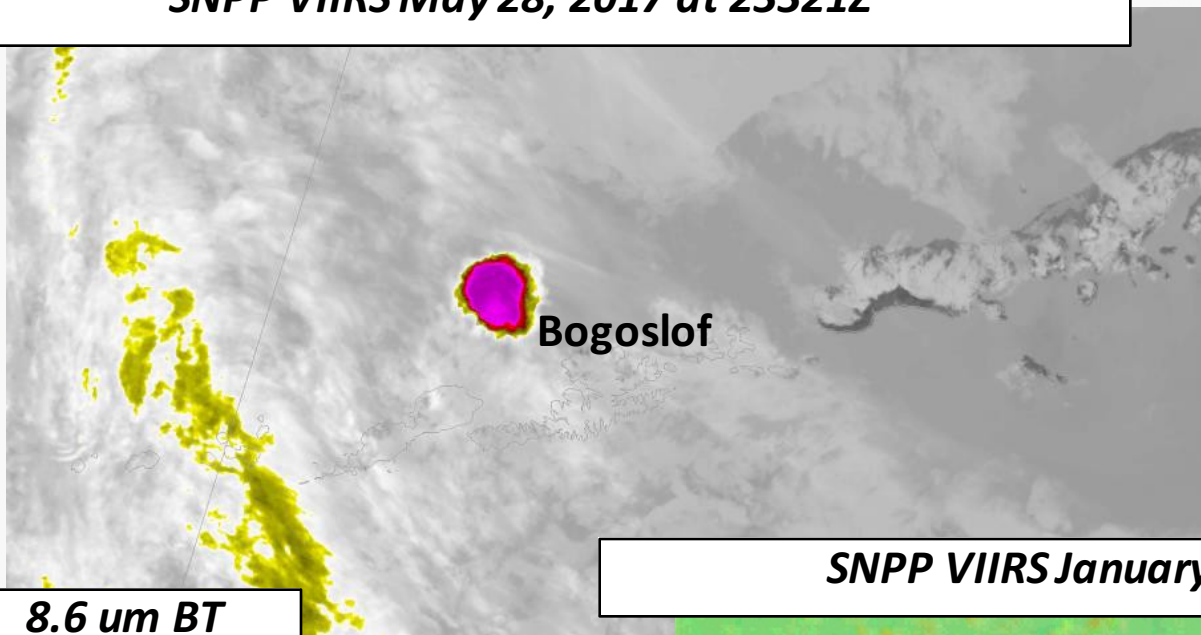
AVIATION: VOLCANIC ASH

SNPP VIIRS March 28, 2016 Pavlof Eruption at 1321Z

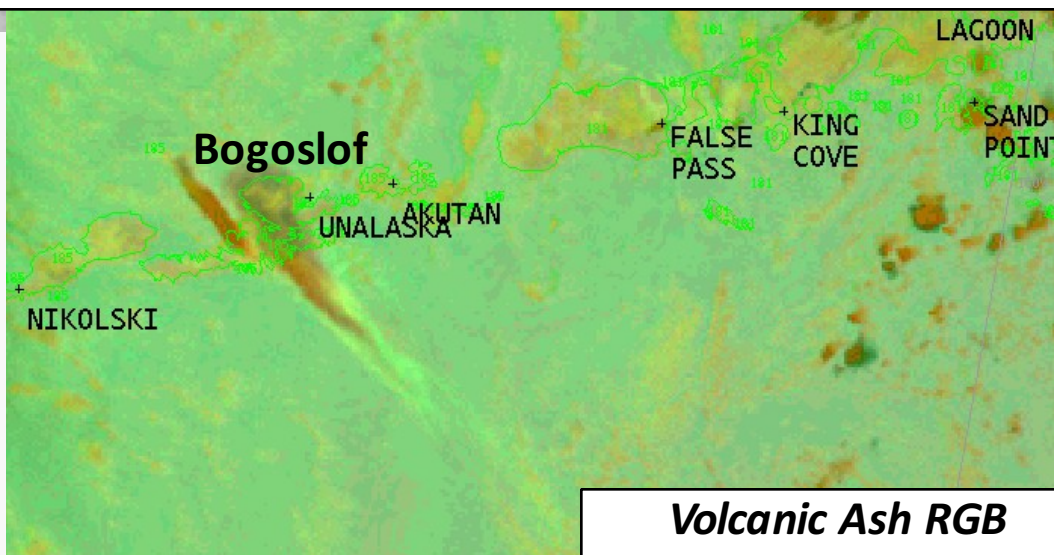


AVIATION: VOLCANIC ASH

SNPP VIIRS May 28, 2017 at 23321Z



SNPP VIIRS January 31, 2017 at 1150Z



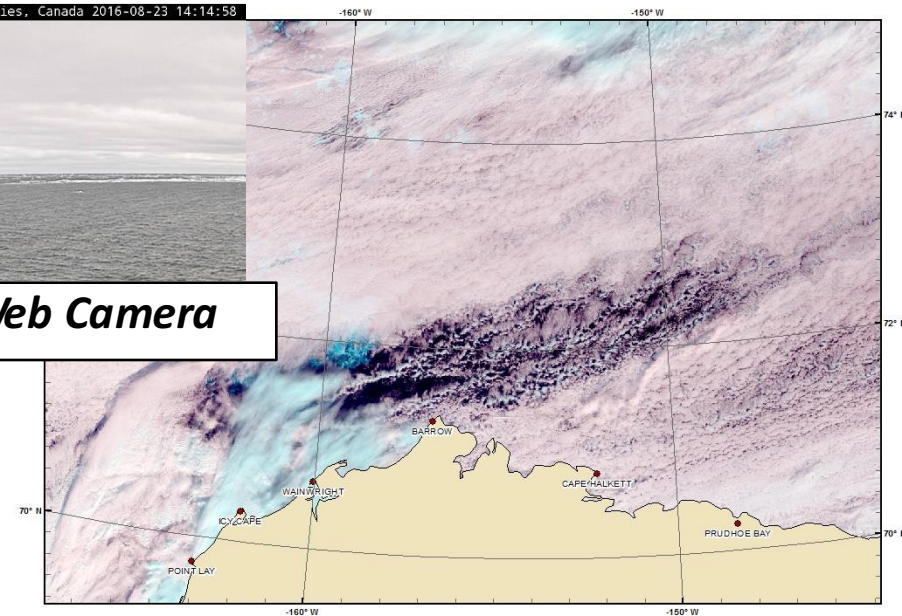
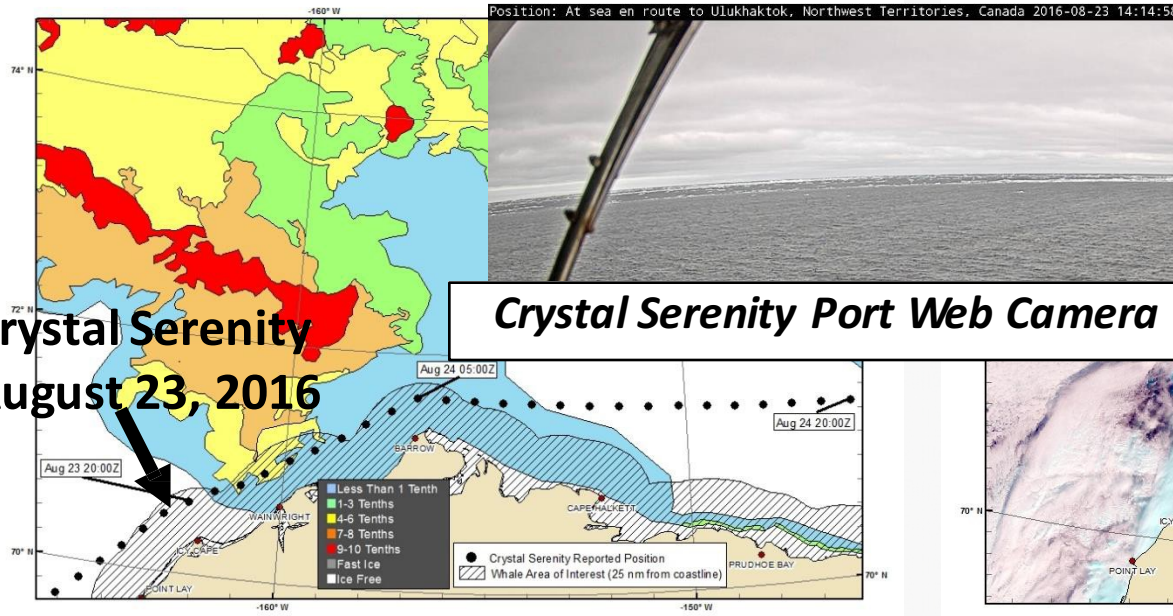
SEA ICE AND WINDS



NWS Alaska Region Situational Awareness Map
ASIP Sea Ice Concentration Analysis - 23 August 2016



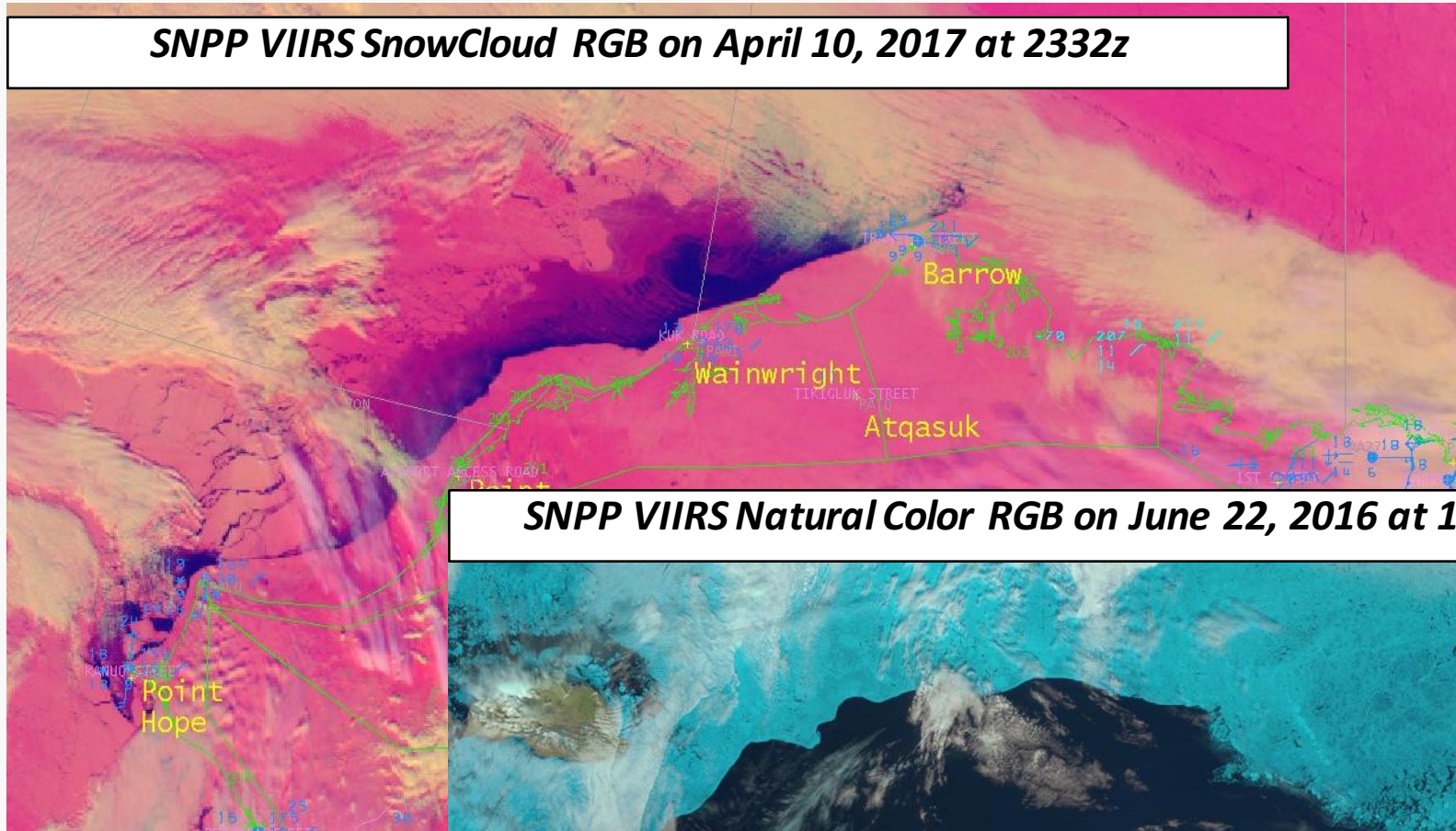
NWS Alaska Sea Ice Program - Support to USCG Alex Haley
SNPP VIIRS False Color Satellite Imagery - 23 August 2016 at 2025Z



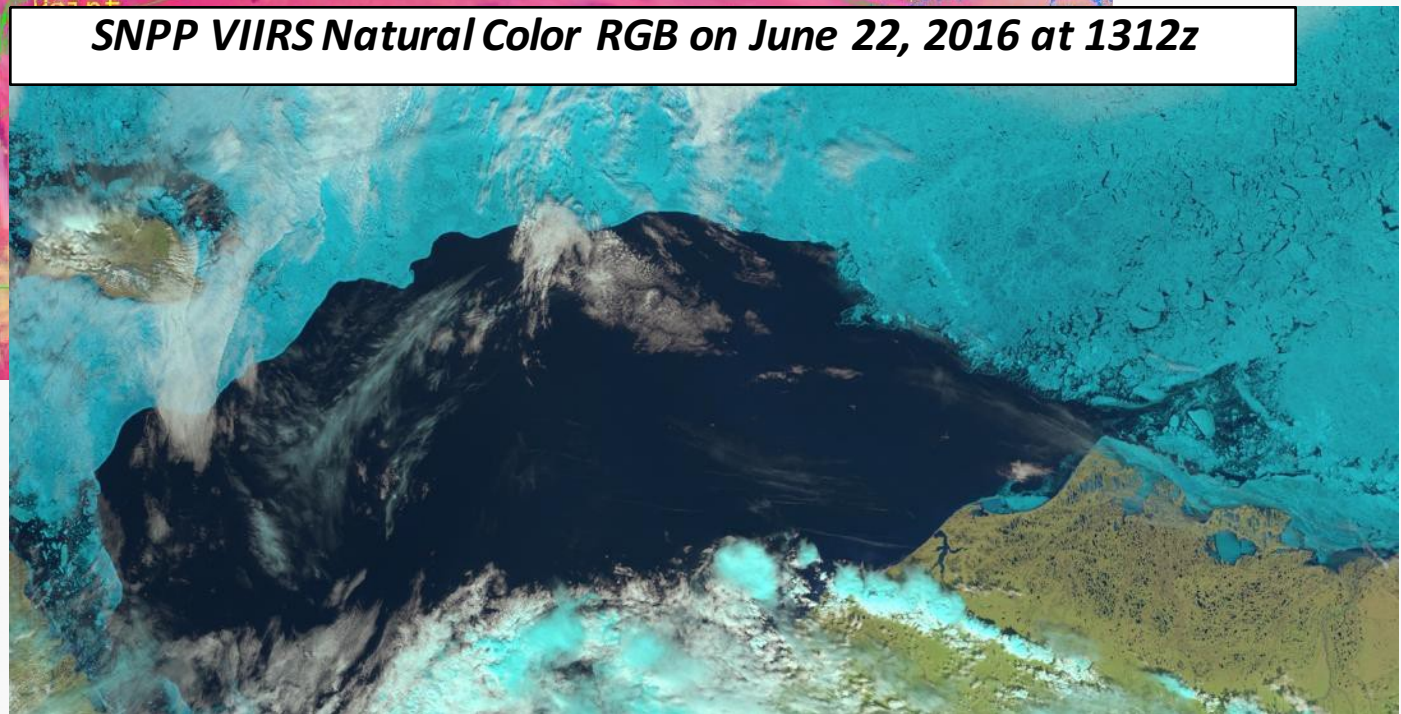
- **Decision Support Services for USCG for Cruise Ships:**
 - Daily briefing reports to US Coast Guard Cutters: Alex Haley, Healy, and Stratton
 - Reports included NWS ASIP Sea Ice analysis, Fairbanks WFO wind/temp forecast and SNPP VIIRS satellite imagery

SEA ICE ANALYSIS

SNPP VIIRS SnowCloud RGB on April 10, 2017 at 2332z



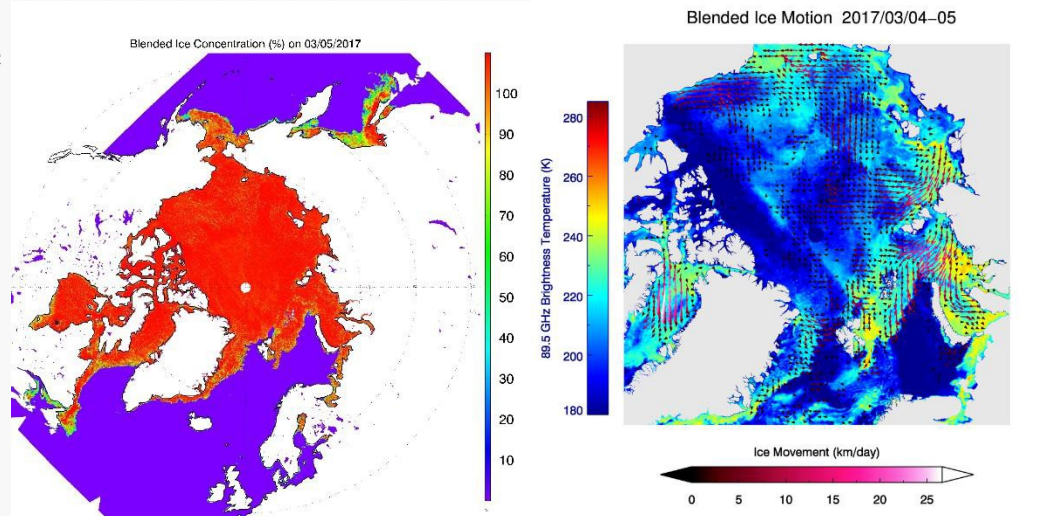
SNPP VIIRS Natural Color RGB on June 22, 2016 at 1312z



Experimental SNPP VIIRS and AMSR2 on March 5, 2017

• JPSS Arctic Initiative

- Collaborate with NWS Alaska Sea Ice Program, National Ice Center and Alaska WFOs to improve sea ice forecasting and monitoring
- Evaluate experimental products FY18
- Snow/Ice Products:



Ice Concentration

Ice Concentration

Images courtesy poster d62 NSC 2017

Liu, et al: Ice Products with VIIRS

NPP/JPSS VIIRS

- Snow cover (binary)
- Snow fraction
- Ice thickness and age
- Ice concentration
- Ice surface temperature

GOES-R ABI

- Fractional snow cover (baseline)
- Ice cover*
- Ice concentration*
- Ice thickness/age*
- Ice motion*

*Future capabilities

AMSR-2 on GCOM-W1

- Snow cover
- Snow depth
- Snow water equivalent (SWE)
- Ice characterization
 - Ice age class (first-, multi-year)
 - Ice concentration

SUMMARY

- Thank you to JPSS and other OCONUS Proving Ground collaborative partners in helping with NWS Alaska satellite operations!

